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PATENT APPLICATION

ATTORNEY DOCKET NO. 200209329-1

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Ming C. Hao et al.

Confirmation No.: 3816

Application No.: 10/694,076

Examiner: Michelle K. Lay

Filing Date: 10-27-2003

Group Art Unit: 2628

Title: Visual Boundaries for Aggregate Information in Pixel-Oriented Graphs

Mail Stop Appeal Brief-Patents
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TRANSMITTAL OF APPEAL BRIEF

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on 04-23-2007.

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) $500.00.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

☐ (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)) for the total number of months checked below:

☐ 1st Month $120	☐ 2nd Month $450	☐ 3rd Month $1020	☐ 4th Month $1590

☐ The extension fee has already been filed in this application.

☒ (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

(* No fee is due. Fee was previously paid on 04-21-2006.)

Please charge to Deposit Account 08-2025 the sum of * ~~$500~~. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees.

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Typed Name: Ginger Yount
Signature: Ginger Yount

Respectfully submitted,
Ming C. Hao et al.
By _____
Dan C. Hu
Attorney/Agent for Applicant(s)
Reg No.: 40,025
Date: June 22, 2007
Telephone: (713) 468-8880, ext. 304

Rev 10/06a (ApiBrief)

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Rev 10/05a (ApiBrief)

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Ming C. Hao et al.	§	Art Unit:	2628
Serial No.:	10/694,076	§		
		§	Examiner:	Michelle K. Lay
Filed:	October 27, 2003	§		
For:	Visual Boundaries for Aggregate Information in Pixel-Oriented Graphs	§	Atty. Dkt. No.:	200209329-1 (HPC.0420US)

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF PURSUANT TO 37 C.F.R § 41.37

Sir:

The final rejection of claims 1-25 is hereby appealed.

I. REAL PARTY IN INTEREST

The real party in interest is the Hewlett-Packard Development Co., L.P.

II. RELATED APPEALS AND INTERFERENCES

None.

III. STATUS OF THE CLAIMS

Claims 1-25 have been finally rejected and are the subject of this appeal.

Date of Deposit: June 22, 2007

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Ginger Yount

IV. STATUS OF AMENDMENTS

No amendment after final rejection has been submitted.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The following provides a concise explanation of the subject matter defined in each of the independent claims involved in the appeal, referring to the specification by page and line number and to the drawings by reference characters, as required by 37 C.F.R. § 41.37(c)(1)(v). Each element of the claims is identified by a corresponding reference to the specification and drawings where applicable. Note that the citation to passages in the specification and drawings for each claim element does not imply that the limitations from the specification and drawings should be read into the corresponding claim element.

Independent claim 1 recites a method for generating a pixel-oriented graph, comprising:

> determining a visual boundary for representing an aggregate of a set of values of a variable depicted in the pixel-oriented graph (Spec., 5:29-6:24; Fig., 2:200);
>
> constructing a set of pixel blocks that represent the values such that the pixel blocks are visually distinguished by the visual boundary (Spec., 6:26-32; Fig. 2:202; Figs. 3a-3f), each pixel block having a set of pixels and each pixel having a pixel value that visually represents one of the values of the variable.

Independent claim 13 recites a data analysis system, comprising:

> data store (Spec., 4:3-18; Fig. 1:10) for holding a set of values of a variable;
>
> display (Spec., 5:4-11, 20-27; Fig. 1:30) for providing a pixel-oriented graph that represents the values;
>
> graph generator that obtains the values from the data store and that determines a visual boundary for representing an aggregate of the values and that constructs a set of pixel blocks that represent the values such that the pixel blocks are visually distinguished by the visual boundary (Spec., 5:20-6:32; Fig. 1:20; Figs. 3a-3f), each pixel block having a set of pixels and each pixel having a pixel value that visually represents one of the values of the variable.

Independent claim 20 recites:

> A computer-readable storage medium that contains a computer program that when executed generates a pixel-oriented graph by determining a visual boundary for representing an aggregate of a set of values of a variable depicted in the pixel-oriented graph (Spec., 5:29-6:24; Fig. 2:200); and constructing a set of pixel blocks that represent the values such that the pixel blocks are visually distinguished by the visual boundary (Spec., 6:26-32; Fig. 2:202; Figs. 3a-3f), each pixel block having a set of pixels and each pixel having a pixel value that visually represents one of the values of the variable.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Claims 1, 2, 8, 11, 13-15, 18, 20-22, and 24 Rejected Under 35 U.S.C. § 102 Over "Hierarchical Pixel Bar Charts" (Keim 2002).

B. Claims 3-5, 9, 10, 12, 16, 17, 19, 23, and 25 Rejected Under 35 U.S.C. § 103 Over Keim 2002.

C. Claims 6 and 7 Rejected Under 35 U.S.C. § 103 Over Keim 2002 in View of "Designing Pixel-Oriented Visualization Techniques: Theory and Applications" (Keim 2000).

VII. ARGUMENT

The claims do not stand or fall together. Instead, Appellant presents separate arguments for various independent and dependent claims. Each of these arguments is separately argued below and presented with separate headings and sub-headings as required by 37 C.F.R. § 41.37(c)(1)(vii).

A. Claims 1, 2, 8, 11, 13-15, 18, 20-22, and 24 Rejected Under 35 U.S.C. § 102 Over "Hierarchical Pixel Bar Charts" (Keim 2002).

1. Claims 1, 2, 8, 11, 13-15, 18, 20-22, and 24.

Independent claim 1 was rejected as being anticipated under § 102 over Keim 2002. A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegall Bros. v. Union Oil*

Co. of California, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051 (Fed. Cir. 1987). Here, it is respectfully submitted that Keim 2002 does not disclose each and every element of claim 1.

Claim 1 recites a method for generating a pixel-oriented graph that comprises:

- determining a visual boundary for representing *an aggregate* of a set of values of a *variable depicted in the pixel-oriented graph*; and
- constructing a set of pixel blocks that represent the values such that the pixel blocks are visually distinguished by the visual boundary (which represents the aggregate of the set of values of the variable depicted in the pixel-oriented graph), where each pixel block has a set of pixels and each pixel has a pixel value that visually represents one of the values of the variable.

In the rejection of claim 1, the Examiner relied primarily upon pages 257-259 of Keim 2002 and Fig. 6 on page 259. *See* 1/23/2007 Office Action at 3.

Pages 258-259 of Keim 2002 describe how to use two different dividing attributes (referred to as D_x and D_y for the horizontal axis and vertical axis, respectively) for partitioning data into disjoint groups, with an example being depicted in Fig. 6 of Keim 2002 on page 259. The dividing attributes can be based on categorical data types, or if numerical data dimensions are used for partitioning, value ranges can be defined. Keim 2002, page 259, left column. In the example depicted in Fig. 6 of Keim 2002, the horizontal axis groups data into different categories (based on dividing attribute D_x that represents different product type categories), and the vertical axis groups data into different regions (based on the dividing attribute D_y). However, the grouping based on the dividing attributes and D_x and D_y, does not provide a visual boundary for representing *an aggregate* of a set of values of a *variable depicted in a pixel-oriented graph.*

In fact, Fig. 6 of Keim 2002 shows that the dividing attributes D_x and D_y divide data according to categorical data types based on product type and region, whereas the variable depicted in the pixel-oriented graph of Fig. 6 of Keim 2002 is the number of items C. Thus, it is

clear that the product type and the region dividing attributes D_x and D_y for partitioning data in the Fig. 6 pixel bar chart of Keim 2002 does not define visual boundaries representing an aggregate of the number of items C.

Even more fundamentally, dividing data into different categories or dividing data into different value ranges, as taught in the left column of page 259 of Keim 2002, does not provide for any visual boundaries that represent an *aggregate* of a set of values of a variable depicted in the pixel-oriented graph. In the Response to Arguments section of the Office Action, the Examiner cited a dictionary definition from the American Heritage Dictionary, arguing that the definition of "aggregate" is "constituting or amounting to a whole; total." However, rather than support the Examiner's rejection, the American Heritage Dictionary definition actually supports Appellant's argument.

Claim 1 specifically recites determining a visual boundary for representing an aggregate of a set of values of a variable depicted in the pixel-oriented graph. Thus, according to the dictionary definition provided by the American Heritage Dictionary,[1] an aggregate of a set of values of a variable depicted in the pixel-oriented graph would be a "whole" or a "total" of a set of values of a variable depicted in the pixel-oriented graph. In contrast, what is taught by Keim 2002 on pages 258-259 is the use of dividing attributes D_x and D_y to partition data according to categories or value ranges – however, partitioning according to categories or value ranges based on dividing attributes D_x and D_y does not constitute providing a "whole" or a "total" (assuming the Examiner's definition of "aggregate" is correct) of the attribute C depicted in the Fig. 6 pixel bar chart of Keim 2002.

[1] Note that Appellant is not conceding that the dictionary definition provided by the American Heritage Dictionary should be the definition of "aggregate." Rather, Appellant is assuming the American Heritage Dictionary definition of "aggregate", as cited by the Examiner, to illustrate that this definition does not support the Examiner's rejection.

Thus, based on the foregoing, it is clear that the Examiner's citation of the definition from the American Heritage Dictionary actually supports Appellant's arguments, and contradicts the Examiner's position.

The Examiner also made the following statement:

> Therefore, as shown in the figures of Keim, all of the pixel bar charts provide a graph consisting of the partitioned data, although partitioned, provides an overall summary and the partitions' relationships, i.e. amounting to a total.

1/23/2007 Office Action at 2.

It is unclear how the fact that a graph "provides an overall summary" supports the rejection of claim 1. The "overall summary" of data depicted in a graph, in the form of the pixel bar chart of Keim 2002, does not disclose a visual boundary for representing an aggregate of a set of values of a variable depicted in the pixel-oriented graph. The "overall summary" is clearly not a visual boundary. Moreover, as discussed above, the partitions based on D_x and D_y also do not provide the visual boundary representing an aggregate of a set of values of a variable depicted in the pixel-oriented graph, as recited in claim 1.

In view of the foregoing, it is clear that Keim 2002 does not anticipate claim 1 and its dependent claims.

Independent claims 13 and 20, and their dependent claims, are similarly not anticipated by Keim 2002.

In view of the foregoing, reversal of the final rejection of the above claims is respectfully requested.

B. Claims 3-5, 9, 10, 12, 16, 17, 19, 23, and 25 Rejected Under 35 U.S.C. § 103 Over Keim 2002.

1. Claims 3-5, 10, and 17.

Claims 3-5, 10 and 17 were rejected as being obvious over Keim 2002. In view of the defective rejection of base claims 1 and 13 over Keim 2002, it is respectfully submitted that the obviousness rejection of dependent claims 3-5, 10, and 17 over Keim 2002 is also defective.

In view of the foregoing, reversal of the final rejection of the above claims is respectfully requested.

2. Claims 9, 16, and 23.

Dependent claim 9 (which depends from claim 1) was also rejected as being obvious over Keim 2002. Claim 9 further recites *filling* in one or more gaps in the pixel blocks by *replicating* one or more pixels in the pixel blocks. In the rejection of claim 9, the Examiner cited the following two passages of Keim 2002: page 259, section 4.2; page 260, section 4.2.1. Section 4.2 of Keim 2002 notes that for a dense display, bars are filled completely. Section 4.2.1 of Keim 2002 notes that "all pixel rows (columns) except the last one are completely filled with pixels." However, nowhere in either of these passages of Keim 2002 is there any disclosure or hint of *filling* in one or more ***gaps*** in the pixel blocks by ***replicating*** one or more pixels in the pixel blocks. It is apparent that the filling performed in Keim 2002 is based on actual pixel values, not based on **replicating** one or more pixels to fill **gaps** in pixel blocks, as recited in claim 9.

Thus, there existed no reason to modify the teachings of Keim 2002 to achieve the subject matter of claim 9. A *prima facie* case of obviousness has therefore not been established with respect to claim 9.

Dependent claims 16 (which depends from claim 13) and 23 (which depends from claim 20) are allowable for similar reasons as claim 9.

In view of the foregoing, reversal of the final rejection of the above claims is respectfully requested.

3. Claims 12, 19, and 25.

Dependent claim 12 (which depends from claim 1) was also rejected as obvious over Keim 2002. Claim 12 recites applying a weight to the visual boundary that indicates a relative importance of the aggregate. With respect to claim 12, the Examiner cited section 4.1 on pages 258-259 of Keim 2002. Specifically, the Office Action cited to the passage in section 4.1 that notes that different attributes may be assigned to colors in charts to relate the different coloring attributes and detect partial relationships among them. 1/23/2007 Office Action at 8. However, assigning attributes to colors, as taught by section 4.1 of Keim 2002, is completely different from applying a weight to the visual boundary that indicates a relative importance of the aggregate. Assigning colors is clearly not the same as assigning weights. Moreover, the cited passage of Keim 2002 notes the assigning of colors to attributes, not the assigning of weights to a *visual boundary* to indicate a relative importance of the *aggregate*. Since Keim 2002 provides absolutely no hint whatsoever of the subject matter of claim 12, it is respectfully submitted that a *prima facie* case of obviousness has clearly not been established with respect to claim 12.

Dependent claims 19 and 25 (which depend from independent claims 13 and 20, respectively) are allowable for similar reasons as claim 12.

In view of the foregoing, reversal of the final rejection of the above claims is respectfully requested.

C. Claims 6 and 7 Rejected Under 35 U.S.C. § 103 Over Keim 2002 in View of "Designing Pixel-Oriented Visualization Techniques: Theory and Applications" (Keim 2000).

1. Claims 6 and 7.

In view of the defective obviousness rejection of base claim 4 over Keim 2002, it is respectfully submitted that the obviousness rejection of claims 6 and 7 over Keim 2002 and Keim 2000 is also defective. Like Keim 2002, Keim 2000 does not teach or provide any hint of a pixel-oriented graph having a visual boundary for representing an aggregate of a set of values of a variable depicted in the pixel-oriented graph, as claimed in claim 1.

Reversal of the final rejection of the above claims is respectfully requested.

CONCLUSION

In view of the foregoing, reversal of all final rejections and allowance of all pending claims is respectfully requested.

Respectfully submitted,

Date: June 22, 2007

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VIII. APPENDIX OF APPEALED CLAIMS

The claims on appeal are:

1. A method for generating a pixel-oriented graph, comprising:

determining a visual boundary for representing an aggregate of a set of values of a variable depicted in the pixel-oriented graph;

constructing a set of pixel blocks that represent the values such that the pixel blocks are visually distinguished by the visual boundary, each pixel block having a set of pixels and each pixel having a pixel value that visually represents one of the values of the variable.

2. The method of claim 1, wherein determining a visual boundary includes obtaining a selection of the aggregate from a user.

3. The method of claim 1, wherein determining a visual boundary comprises determining a location for a line in the pixel-oriented graph in response to the aggregate.

4. The method of claim 1, wherein determining a visual boundary comprises determining a location for an area in the pixel-oriented graph in response to the aggregate.

5. The method of claim 4, wherein determining a location for an area comprises determining a location for a rectangle.

6. The method of claim 4, wherein determining a location for an area comprises determining a location for a circle.

7. The method of claim 1, wherein determining a visual boundary comprises determining a location for a curve in the pixel-oriented graph in response to the aggregate.

8. The method of claim 1, wherein constructing a set of pixel blocks comprises determining a set of pixel blocks to be positioned above the visual boundary and a set of pixel blocks to be positioned below the visual boundary.

9. The method of claim 1, further comprising filling in one or more gaps in the pixel blocks by replicating one or more pixels in the pixel blocks.

10. The method of claim 1, wherein determining a visual boundary comprises obtaining a user selection of the visual boundary.

11. The method of claim 1, further comprising coloring the visual boundary.

12. The method of claim 1, further comprising applying a weight to the visual boundary that indicates a relative importance of the aggregate.

13. A data analysis system, comprising:

data store for holding a set of values of a variable;

display for providing a pixel-oriented graph that represents the values;

graph generator that obtains the values from the data store and that determines a visual boundary for representing an aggregate of the values and that constructs a set of pixel blocks that represent the values such that the pixel blocks are visually distinguished by the visual boundary, each pixel block having a set of pixels and each pixel having a pixel value that visually represents one of the values of the variable.

14. The data analysis system of claim 13, wherein the graph generator obtains a selection of the aggregate from a user.

15. The data analysis system of claim 13, wherein the graph generator constructs the pixel blocks by determining a set of pixel blocks to be positioned above the visual boundary and a set of pixel blocks to be positioned below the visual boundary.

16. The data analysis system of claim 13, wherein the graph generator fills in one or more gaps in the pixel blocks by replicating one or more pixels in the pixel blocks.

17. The data analysis system of claim 13, wherein the graph generator obtains a selection of the visual boundary from a user.

18. The data analysis system of claim 13, wherein the graph generator colors the visual boundary.

19. The data analysis system of claim 13, wherein the graph generator applies a weight to the visual boundary that indicates a relative importance of the aggregate.

20. A computer-readable storage medium that contains a computer program that when executed generates a pixel-oriented graph by determining a visual boundary for representing an aggregate of a set of values of a variable depicted in the pixel-oriented graph and constructing a set of pixel blocks that represent the values such that the pixel blocks are visually distinguished by the visual boundary, each pixel block having a set of pixels and each pixel having a pixel value that visually represents one of the values of the variable.

21. The computer-readable storage medium of claim 20, wherein determining a visual boundary includes obtaining a selection of the aggregate from a user.

22. The computer-readable storage medium of claim 20, wherein constructing a set of pixel blocks comprises determining a set of pixel blocks to be positioned above the visual boundary and a set of pixel blocks to be positioned below the visual boundary.

23. The computer-readable storage medium of claim 20, further comprising filling in one or more gaps in the pixel blocks by replicating one or more pixels in the pixel blocks.

24. The computer-readable storage medium of claim 20, further comprising coloring the visual boundary.

25. The computer-readable storage medium of claim 20, further comprising applying a weight to the visual boundary that indicates a relative importance of the aggregate.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.